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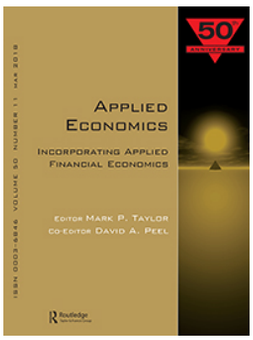

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# Financial development, financial liberalization and social capital

Luuk Elkhuizen[a], Niels Hermes[a,b], Jan Jacobs[a] and Aljar Meesters[a]

[a]Faculty of Economics and Business, University of Groningen, Groningen, The Netherlands; [b]Solvay Business School, Université Libre de Bruxelles, Bruxelles, Belgium

**ABSTRACT**

The relationship between financial liberalization policies and financial development is controversial. The impact of these policies differs greatly across countries. In the literature, the quality of formal institutions has been identified as an important source of this heterogeneity, as countries with a weak institutional environment generally fail to benefit from financial liberalization. Using panel data covering 82 countries for the period 1973–2008, we find evidence that social capital may substitute for formal institutions as a prerequisite for effective financial liberalization policies. In particular, we find that during the post Washington-consensus period countries with a high prevailing level of social capital can ensure that financial liberalization positively influences financial development, despite the poor quality of their formal institutions.

**KEYWORDS**

Financial liberalization; financial development; social capital; generalized trust

**JEL CLASSIFICATION**

G15; G21; G28; E5

## I. Introduction

While research on the relationship between financial development and economic growth is still expanding, there appears to be consensus that financial development has a positive influence on economic growth (Beck, Levine, and Loayza 2000). This consensus renders the factors that influence financial development important. Especially policy makers of countries with less developed financial sectors may benefit from a better understanding of the forces that shape their financial sector. Consequently, there has been a spike in research on the determinants of financial development in recent years. This research has focused on long-run (e.g. culture, geography, etc.) as well as short-run (e.g. macroeconomic policies) determinants of financial development.

Financial liberalization is one of the short-run determinants that has been put forward as a potentially important prerequisite for successful financial development. This view rests on the belief that liberalizing financial markets allows interest rates to reach their competitive market equilibrium, which will boost savings, investments and ultimately economic growth (McKinnon 1973; Shaw 1973). Based on this view, policy makers have been liberalizing their financial sectors since the 1970s. This accelerated during the 1990s, after Williamson (1990) introduced what he called the 'Washington consensus'.

This view has been contested, however, both in academic research as well as by practical experience. For example, in the early 1980s Latin American countries such as Chile and Argentina experienced huge macroeconomic crises after a period of strong financial liberalization (Diaz-Alejandro 1985). Also, the Asian crisis of 1997–1998 was, at least partly, due to financial liberalization programmes these countries had been carried out since the late 1980s (Mishkin 1999). These and other experiences suggest that we still do not exactly know under what conditions financial liberalization policies really work, i.e. the context in which these policies are carried out may have an impact on the outcomes of these policies.

Recently, research has started exploring the underlying sources of the observed heterogeneity with respect to the effects of financial liberalization on financial development and economic growth. Factors that have been identified as prerequisites of successful financial liberalization are bureaucratic efficiency, a strong rule of law, proper contract

**CONTACT** Niels Hermes c.l.m.hermes@rug.nl Faculty of Economics and Business, University of Groningen, PO BOX 800, 9700 AV Groningen, The Netherlands

Present affiliation for Aljar Meesters is Copernica, Amsterdam, The Netherlands

enforcement, control over corruption and prudential regulation and supervision (Demirgüç-Kunt and Detragiache 1998; Summers 2000; Hermes and Meesters 2015).

In this article, we contribute to this literature by investigating the importance of social capital as a prerequisite for effective financial liberalization policies. In particular, we argue that social capital may substitute for failing formal institutions. That is, financial liberalization policies may be effective in stimulating financial development, even if strong formal institutions are absent, as long as social capital development is strong.

The remainder of this article is organized as follows. Section II discusses the literature describing the impact of financial liberalization on financial development. In this section, we also discuss social capital and how this may act as a prerequisite for effective financial liberalization policies. Section III describes our empirical methodology and provides a description of our data set. The results of the empirical analysis are discussed in Section IV. Section V concludes the study.

## II. Financial development, financial liberalization and social capital: a literature review

### *Financial development and the pros and cons of financial liberalization*

Financial development occurs when financial markets or institutions reduce market imperfections, thereby allowing capital to flow to its most productive use (Čihák et al. 2012). In the 1950s and 1960s, conventional wisdom stipulated that governments could promote development by protecting and intervening in financial markets, using policies such as interest rate ceilings and credit controls, and establishing state-owned banks. Government interventions like these are commonly referred to in the literature as financial repression (Andersen and Tarp 2003). These policies became subject to severe criticism in the early 1970s by McKinnon (1973) and Shaw (1973), who argued that liberalizing financial sectors would spur growth. According to them, keeping interest rates low negatively affects savings, which hampers the development of the banking system. Likewise, it creates excess demand for credit, which harms efficient allocation of capital as banks have no incentive to direct credit towards the most profitable projects.[1]

From the 1970s, countries throughout the world acted gradually started liberalizing their financial sectors by reducing interest and credit controls, reducing entry barriers for domestic and foreign banks, and liberalizing the capital account. Increased bank competition was expected to stimulate financial development as banks would offer higher interest rates to attract more savings, enabling them to provide more investment. Moreover, competition would provide incentives to reduce overhead costs and improve on bank and risk management (Denizer, Dinc, and Tarimcilar 2007), while the entry of foreign banks would stimulate the spillover of new bank- and risk-management techniques and the development of new financial instruments and services (Claessens, Demirgüç-Kunt, and Huizinga 2001). Capital account liberalization was expected to increase possibilities for portfolio diversification for domestic as well as foreign investor, which would also encourage domestic financial market development (Chinn and Ito 2006). Among developing countries, financial liberalization occurred especially in the post Washington-consensus period (i.e. after 1990), arguably because these countries feared their economies would miss out on the benefits of an increasingly global world economy (Gore 2000).

The expected positive effects of financial liberalization have been disputed. Stiglitz (2000) argues that the argument that liberalizing repressed financial sectors leads to more efficient credit allocation is flawed. While under perfect information this may be true, financial markets are characterized by asymmetric information. Stiglitz shows that under asymmetric information, decentralization through the price mechanism (i.e. allowing banks to set their interest rates freely) will not necessarily lead to a Pareto-efficient equilibrium.

Boot (2000) argues that financial liberalization may actually aggravate information asymmetries. As bank competition is increased and interest rates go down, borrowers may have an incentive to end long-lasting relationships with their banks. When

[1]See Loizos (2017) for a recent review of the financial repression-liberalization debate.

borrowers switch to other banks, the information that the previous bank has collected with respect to their borrowers is no longer of value, which increases information asymmetries.

Increased competition between banks may also lead to a reduction in franchise value which, in turn, may lead to increased risk taking. As less efficient banks fail to compete by reducing overhead costs, they may adopt a gambling strategy, i.e. they reduce collection of information and monitoring efforts in order to remain profitable (Hellmann, Murdock, and Stiglitz 2000; Andersen and Tarp 2003). While in the long run inefficient banks will likely be replaced by more efficient ones (Kaminsky and Schmukler 2008), at least in the short run, financial liberalization may lead to instability instead of efficiency.

Finally, several authors stress that capital inflows following financial liberalization are often of a speculative nature and do not lead to long-run investments (Rodrik 1998; Stiglitz 2000). This may lead to sudden capital outflows, potentially followed by banks runs and banking crises (Diamond and Dybvig 1983; Demirgüç-Kunt and Detragiache 1998; Rodrik 1998).

The criticism on the positive view of financial liberalization has been corroborated by experiences from practice. Several countries have experienced deep financial crises, in some cases accompanied by sharp economic downturns. The recent global financial and economic crisis of 2007–2008 is a clear example of this, but also the crises experienced by the Southeast Asian countries in 1997–1999, Mexico in 1996, Argentina and Chile in the early 1980s are a case in point.

Empirical studies find mixed results with respect to the effectiveness of financial liberalization in stimulating financial development. While the net effect of financial liberalization appears to be positive (Huang 2011), there is large heterogeneity between countries and time periods. In light of this heterogeneity, recent empirical literature has started to identify the prerequisites of successful financial liberalization policies. Several studies have focused on the importance of effective bank regulation and supervision. Hermes and Meesters (2015) find that the impact of financial liberalization on bank efficiency is conditional on the quality of regulation and supervision of the banking system. This result is corroborated by a study from the Sahay et al. (2015), which finds evidence that financial development is positively related to the quality of the regulatory framework, as measured by compliance with Basel Core Principles on banking supervision and the Insurance Core Principles for the insurance industry. These results support the view that proper financial market regulation and supervision are necessary to make sure that imprudent behaviour of banks and other financial institutions is effectively curbed (Andersen and Tarp 2003), preventing these institutions in competitive environments (i.e. after liberalizing the financial sector) from taking on more risk than is socially desirable.

Demirgüç-Kunt and Detragiache (1998) find evidence that a weak institutional environment – using measures of the rule of law, level of corruption, law enforcement and bureaucratic efficiency – and the absence of proper regulation and supervision makes the occurrence of financial crises more likely. Their study suggests that institutional quality and proper regulation and supervision appear to be important prerequisites for successful financial liberalization. In a similar vein, Klein and Olivei (2008) show that capital account liberalization promotes financial development. Yet, this result is primarily driven by developed countries, in which institutions and bank regulation and supervision are generally more developed. For developing countries, having lower levels of institutional quality and bank regulation and supervision, capital account liberalization fails to promote financial development.

To conclude, recent empirical studies suggest that without proper regulation and supervision of financial institutions, and without the right institutional environment, financial liberalization may not meet the expectations of improving financial development.

### *Financial development, financial liberalization and the role of social capital*

Coleman (1988) introduced the notion of social capital as a resource – similar to human and physical capital – on which individuals can draw when producing or trading with other market participants. Social capital can present itself in the form of interpersonal trust, information sharing, and social

norms. Higher levels of social capital (i.e. environments in which interpersonal trust, free information sharing and strict social norms are stronger) may be associated with better economic outcomes as they allow individuals to be more productive.

Since the 1990s, social capital has been introduced in empirical studies as a potentially important determinant of economic growth. Overall, these studies suggest that social capital indeed positively contributes to economic growth (La Porta et al. 1997; Knack and Keefer 1997; Zak and Knack 2001). Several studies stress that one of the main reasons why social capital promotes growth is that it can be an effective substitute of absent or failing formal institutions (Ahlerup et al. 2009). The substitutability between formal institutions and social capital rests on two pillars. First, by trusting one another two parties can engage in transactions that could otherwise only be conducted if (enforceable) contracts were specified (Knack and Keefer 1997; Fukuyama 1995). Second, substitutability between formal regulation and social capital also requires that both parties are correct to trust each other. In this respect, Boix and Posner (1998) argue that norms and expectations of appropriate behaviour induce people to comply with existing rules and regulations, even if enforcement mechanisms are absent. Thus, by trusting each other people behave in ways not to break this trust.

Social capital has also been introduced in the literature on financial development. Yet, studies using social capital to explain financial development are scarce. Guiso, Sapienza, and Zingales (2004) show that households and firms located in high trust areas have a higher likelihood of obtaining credit when they need it. Moreover, they find that households and firms in high trust areas invest more in stocks and use more personal checks. They argue that persons living in high trust areas have less fear that a financial institution expropriates their assets, leading them to save more. Similarly, financial institutions in high trust areas provide more loans as they have less fear that the loans will not be repaid. Calderón, Chong, and Galindo (2002) find similar results in a cross-country setting. In particular, they find that countries with a higher level of social capital tend to have larger financial sectors.

The role of social capital is also investigated in research on the effectiveness of microfinance. Group lending, being the dominant lending technique in microfinance, rests on the principle of high trust and strong social ties among group members who are jointly responsible for the repayment of the group loan. Several studies have shown that repayment performance is determined by the existence of high levels of social capital (Karlan 2007; Cassar et al. 2007; Dufhues et al. 2011, 2013; Postelnicu and Hermes, 2016).

The results of these studies suggest that higher levels of social capital are associated with higher levels of financial development. Yet, next to this direct relationship, social capital may also indirectly affect financial development by having an impact on the relationship between financial liberalization and financial development. As argued in the literature, institutional quality is an important prerequisite for the effectiveness of financial liberalization policies in stimulating financial development. At the same time, it has also been shown that failing institutions may be substituted for by social capital. Combining these two findings leads us to argue that the effectiveness of financial liberalization in improving financial development may be strong, even if the institutional quality is low, in the presence of high levels of social capital.

The intuition behind this argument can be illustrated as follows. When financial liberalization policies are carried out in the presence of weak institutions, individuals may only choose to increase their savings rate if they have enough trust that their funds are being held responsibly by banks. Similarly, on the supply side, banks may only find proper investment opportunities for their increased availability of funds if the prevailing level of social capital is high enough to ensure timely repayment. Finally, the extent to which clients switch banks after financial liberalization – which would lead to the loss of valuable information (Boot 2000) – may be reduced in the presence of high levels of social capital as this is expected to keep clients from ending long-lasting relationships with their bank. Based on the above discussion, we derive the following hypothesis:

**H1:** *The association between financial liberalization and financial development is conditional on the prevailing level of social capital.*

## III. Methodology and data

In order to test our hypothesis, we adopt the following econometric model:

$$\begin{aligned} Growth\ of\ FD^{i}_{t,t-4} = {} & \rho_1 FD^{i}_{t-5} \\ & + \rho_2 FINLIB^{i}_{t-5} + \rho_3 SC^{i} \\ & + \rho_4 SC^{i} * FINLIB^{i}_{t-5} \\ & + \rho_5 X^{i}_{t-5} + \varepsilon^{i}_{t}, \end{aligned} \quad (1)$$

where *FD* refers to financial development, *FINLIB* refers to the level of financial liberalization,*SC* refers to the level of social capital, $SC * FINLIB$ is an interaction term between social capital and financial liberalization and *X* is a vector of control variables. The indices *i* and *t* refer to country and time, respectively. The model is specified as a growth on levels regression equation with non-overlapping data periods. More specifically, we use data for the period 1973–2008 and calculate the 4-year average growth rate of the level of financial development as the dependent variable. All independent variables are measured as the level of these variables at the end of the previous period. Thus, the growth of financial development for the period 1974–1977 is explained by the levels of the independent variables in 1973, etc. This approach allows us to carry out the estimations with the independent variables entering the model one period lagged in order to control for potential reverse causality. The dataset contains information for 82 countries (see Table A.1 in the Appendix to this article).

In the literature, financial development has been measured in various ways. These measures refer to different dimensions of financial development. In most of the literature, the measures used focus on financial deepening, i.e. the extent to which financial institutions increase the size and variety of financial services offered to economic agents. We follow a similar strategy and use total financial system deposits to GDP (*DEPGDP*), private credit to GDP (*PRCGDP*) and liquid liabilities to GDP (*LLY*) to measure financial deepening. All data are retrieved from the Global Financial Development Database (GFDD), which has been developed by the World Bank (Čihák et al. 2012). Since we have three measures of financial deepening, we estimate three different versions of our model as shown in Equation (1), each version using a different measure of financial deepening. Similar to what is standard in the growth literature, we include the level of financial development at the end of the previous 4-year period (also termed as the *initial* level) as one of the independent variables to control for potential convergence of the growth rate of financial development across countries.

Financial liberalization (*FINLIB*) is measured based on a dataset developed by Abiad, Detragiache, and Tressel (2010). This dataset includes various dimensions of financial liberalization, including measures of reducing or removing restrictions on international capital flows, credit controls and excessively high reserve requirements, entry barriers, state ownership in the banking sector, and interest rate controls. Each country in the dataset is rated every year on a scale from 0 to 3 with respect to these five dimensions, where 0 refers to complete repression and 3 refers to a completely liberalized financial sector with respect to a specific dimension. We take the sum of these five dimensions, which means that our financial liberalization variable that can take on values between 0 and 15.

Social capital (*SC*) is measured using data from the World Values Survey (WVS). The WVS is a compilation of national surveys on values and norms, carried out in six time waves (1981–1984, 1990–1993, 1995–1997, 1999–2004, 2005–2009 and 2010–2014). In our study, we make use of data from the first five waves. Our measure of social capital is based on the following specific question: 'Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people'?, where respondents (a minimum of thousand per time wave per country) can choose among the options 'Most people can be trusted', 'You cannot be too careful', or 'Don't know'. This approach has been used in several other studies as a measure of social capital (Knack and Keefer 1997; Ahlerup et al. 2008; Beugelsdijk and Maseland 2011).[2] In order to be able to include the trust data in our analysis, we follow a common procedure in

[2]For those countries that are not included in any of the WVS waves, we use data from the Institute of Social Studies and the Economic and Social Data Service (ESDS)/Eurobarometer, which are organizations that include the same question in their surveys. ESDS allows respondents to rate their answer on a scale from 1 to 9. We rescaled the answers from this source by taking the proportion of respondents that answered the question with a 1, 2, 3 or 4 and label them as answering the trust question with 'most people can be trusted'.

existing literature by excluding the non-respondents and subsequently calculating the proportion of people who answered the question with 'Most people can be trusted' (Knack and Keefer 1997; Calderón, Chong, and Galindo 2002; Kouvavas and ten Kate 2013).[3] In cases where the same country was included in multiple waves, we calculate the average level of trust over time and assume that this average describes a country's level of trust in the period 1973–2008. This assumption is based on the claim made elsewhere in the literature that social capital is changing only very slowly over time (Algan and Cahuc 2010). It is also corroborated by the data we use: the average correlation between different WVS waves of answers to the trust question is higher than 0.8.

As is clear from the specification of the econometric model in Equation (1), formal institutions are not directly entering the analysis. Instead, the role of institutions is analyzed indirectly by creating sub-samples of countries based on the overall quality of the formal institutional setting. Formal institutions are measured using data from the World Governance Indicators (WGI). This is a widely used database covering different dimensions of institutions including the rule of law, voice and accountability, government effectiveness, control over corruption and regulatory quality. We add the quality of banking regulation and supervision (data from Abiad, Detragiache, and Tressel 2010) as a sixth dimension, because this formal institutional dimension is of particular interest in the context of our study. As is shown in Appendix Table A.2, the institutional variables are highly correlated. This is why we use principal component analysis (PCA) to effectively capture the variation in these variables into one specific component.[4] The results of the PCA are presented in Appendix Table A.3 and Figure A.1. Table A.3 shows that the first principal component explains over 80 per cent of the variation of the six underlying institutional variables. Moreover, as is shown in Figure A.1, it is the only (principal) component with an eigenvalue greater than 1. We take this component as our variable measuring the quality of the formal institutional environment (measured by the six different dimensions) in a country and use this in the empirical analysis. We name this variable *INSTITUTIONS*. A higher value of this variable represents a higher value of the quality of the formal institutional environment in a country.

We include several control variables in vector *X*. These variables have been suggested by the financial development literature (Huang 2011). In particular, we include the initial levels of GDP (*GDP*), the trade to GDP ratio (*TRADE*), the inflation rate (*INFLATION*), population size (*POPULATION*), an index variable measuring the extent to which the country functions as a democracy (*DEMOC*) and an index variable measuring the existence of political constraints that prevent policy changes from being implemented (*POLCON*). Data for *GDP, TRADE, INFLATION* and *POPULATION* come from the GFDD.[5] These variables are expected to be positively associated with our measures of financial development. Data for *DEMOC* are retrieved from the Polity IV database; data for *POLCON* are taken from a database compiled by Henisz (2002). For both variables, a higher score on the index (i.e. becoming more a democracy or facing less political constraints) is expected to be positively related to financial development.[6]

The social capital variable is time-invariant. Ideally, therefore, we would like to use a specification that allows time-invariant variables to be included, e.g. a pooled or random effects specification. However, a Hausman test shows that using a pooled OLS or random effects model leads to biased

[3]We do acknowledge that using survey data to measure social capital may be criticized. In particular, this approach may lead to different interpretations of what respondents see as social capital. For example, they may think of different people when they are asked whether 'most people' can be trusted. What is more, this difference may be determined by culture (Delhey, Newton, and Welzel 2011). One suggestion for future research would thus be to include more than one proxy for social capital, for example measures of social capital not relying on survey data.

[4]We take the weighted average for the period 1996 (the first year for which we have data on formal institutions from the WGI database) to 2010 (the last year from which we use the WGI database) for each variable per country before performing the principal component analysis. This means we assume that the quality of formal institutions is constant over time and can be extrapolated backwards in time. Although this may appear restrictive, the average correlation between 1996 and 2010 is higher than 0.9. We use this approach because this allows us to create data on the formal institutional environment for the years before 1996.

[5]In the regression analysis, the data for *GDP, INFLATION* and *POPULATION* are expressed in logs.

[6]An overview of all variables used in the analysis and their respective sources can be found in Appendix Tables A.4 and A.5.

and inconsistent estimates. Hence, Equation (1) is specified as a fixed-effects model, which means that $\rho_3$ is omitted, that is, $SC^i$ does not enter the equation. We are thus primarily interested in the coefficient $\rho_4$. Technically, the marginal effect of financial liberalization on financial development growth can be written as $\frac{dFDgrowth}{dFINLIB} = \rho_2 + \rho_4 * SC$. Since $SC$ is always positive, a positive coefficient $\rho_4$ indicates that the effect of financial liberalization on financial development growth is stronger for higher levels of social capital is, which supports our hypothesis. Table 1 provides descriptive statistics for the variables used in the analysis. Table 2 shows the correlation matrix.

## IV. Results

### Main results

The results of estimating the model expressed in Equation (1) are presented in Tables 3–5. Table 3 shows that, if we take into account all countries and years, our financial liberalization measure, as well as its interaction with social capital, are never significant. Of the control variables, the coefficients of the initial values of financial deepening are always negative and highly significant. This suggests that convergence of the growth rate of financial development across countries is indeed taking place. This result is consistently found in all the regressions we perform.

**Table 1.** Descriptive statistics.

| Variable | N | Mean | SD | Median | Min | Max |
|---|---|---|---|---|---|---|
| Dependent variables | | | | | | |
| *LLY* | 2470 | 0.50 | 0.36 | 0.42 | 0.04 | 2.94 |
| *DEPGDP* | 2446 | 0.42 | 0.34 | 0.33 | 0.00 | 2.85 |
| *PRCGDP* | 2468 | 0.47 | 0.41 | 0.30 | 0.00 | 2.28 |
| Independent variables | | | | | | |
| *SC* | 2819 | 0.26 | 0.15 | 0.22 | 0.07 | 0.75 |
| *FINLIB* | 2557 | 8,18 | 4,17 | 8,75 | 0.00 | 15.0 |
| *Credit controls* | 2557 | 1.62 | 1.11 | 1.50 | 0.00 | 3.00 |
| *Interest rate controls* | 2557 | 1.79 | 1.33 | 3.00 | 0.00 | 3.00 |
| *Entry barriers* | 2557 | 1.80 | 1.19 | 2.00 | 0.00 | 3.00 |
| *Privatization* | 2557 | 1.28 | 1.19 | 1.00 | 0.00 | 3.00 |
| *International capital flows* | 2557 | 1.69 | 1.13 | 2.00 | 0.00 | 3.00 |
| Control variables | | | | | | |
| *GDP* | 2777 | 2.88e+11 | 9.84e+11 | 4.10e+10 | 6.80e+08 | 1.40e+13 |
| *INFLATION* | 2560 | 0.12 | 0.15 | 0.08 | −0.11 | 1.00 |
| *TRADE* | 2678 | 0.66 | 0.50 | 0.55 | 0.06 | 4.40 |
| *POPULATION* | 2818 | 5.58e+07 | 1.57e+08 | 1.50e+07 | 1.30e+06 | 1.30e+09 |
| *DEMOC* | 2818 | 13.59 | 6.85 | 17.00 | 0.00 | 20.00 |
| *POLCON* | 2772 | 0.30 | 0.21 | 0.36 | 0.00 | 0.72 |
| Additional variables (used in the principal component analysis) | | | | | | |
| *Rule of law* | 2818 | 0.20 | 1.03 | −0.01 | −1.43 | 1.94 |
| *Voice and accountability* | 2818 | 0.22 | 0.91 | 0.01 | −1.85 | 1.62 |
| *Government effectiveness* | 2818 | 0.35 | 1.00 | −0.02 | −1.05 | 2.14 |
| *Control of corruption* | 2818 | 0.28 | 1.11 | −0.13 | −1.16 | 2.44 |
| *Regulatory quality* | 2818 | 0.35 | 0.92 | 0.22 | −1.74 | 1.97 |
| *Banking Supervision* | 2818 | 0.90 | 1.01 | 1.00 | 0.00 | 3.00 |

**Table 2.** Pair-wise correlation matrix.

| | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] | [10] | [11] | [12] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variables* | | | | | | | | | | | | |
| *[1] LLY* | 1.00 | | | | | | | | | | | |
| *[2] DEPGDP* | 0.94 | 1.00 | | | | | | | | | | |
| *[3] PRCGDP* | 0.85 | 0.87 | 1.00 | | | | | | | | | |
| *Independent variables* | | | | | | | | | | | | |
| *[4] SC* | 0.38 | 0.34 | 0.50 | 1.00 | | | | | | | | |
| *[5] SC*FINLIB* | 0.34 | 0.37 | 0.52 | 0.94 | 1.00 | | | | | | | |
| *[6] FINLIB* | 0.11 | 0.24 | 0.28 | 0.19 | 0.47 | 1.00 | | | | | | |
| *Controls* | | | | | | | | | | | | |
| *[7] GDP* | 0.52 | 0.51 | 0.60 | 0.41 | 0.40 | 0.14 | 1.00 | | | | | |
| *[8] INFLATION* | −0.53 | −0.50 | −0.51 | −0.34 | −0.35 | −0.23 | −0.33 | 1.00 | | | | |
| *[9] TRADE* | 0.41 | 0.44 | 0.34 | 0.02 | 0.08 | 0.21 | 0.01 | −0.24 | 1.00 | | | |
| *[10] POPULATION* | 0.06 | −0.03 | −0.03 | −0.14 | −0.31 | −0.45 | 0.44 | 0.09 | −0.32 | 1.00 | | |
| *[11] DEMOC* | −0.02 | 0.11 | 0.20 | 0.27 | 0.39 | 0.36 | 0.31 | 0.09 | −0.08 | −0.26 | 1.00 | |
| *[12] POLCON* | 0.15 | 0.22 | 0.25 | 0.14 | 0.24 | 0.30 | 0.20 | −0.03 | −0.04 | −0.19 | 0.52 | 1.00 |

The variables *GDP, INFLATION* and *POPULATION* are expressed in logs.

**Table 3.** Financial liberalization, financial development and the role of social capital: results for all years and all countries.

| | *LLY growth* | *DEPGDP growth* | *PRCGDP growth* |
|---|---|---|---|
| *LLY(−1)* | −0.208 | | |
| | (6.78)*** | | |
| *DEPGDP(−1)* | | −0.246 | |
| | | (4.01)*** | |
| *PRCGDP(−1)* | | | −0.232 |
| | | | (6.68)*** |
| *FINLIB(−1)* | 0.000 | 0.000 | 0.001 |
| | (0.12) | (0.11) | (0.38) |
| *SC*FINLIB(−1)* | 0.005 | −0.002 | 0.010 |
| | (0.82) | (0.16) | (1.10) |
| *TRADE(−1)* | 0.034 | 0.043 | 0.045 |
| | (2.28)** | (2.20)** | (1.80)* |
| *DEMOC(−1)* | 0.000 | 0.000 | 0.000 |
| | (0.02) | (0.10) | (0.03) |
| *INFLATION(−1)* | −0.004 | 0.002 | 0.000 |
| | (1.37) | (0.43) | (0.00) |
| *GDP(−1)* | 0.018 | 0.028 | 0.049 |
| | (2.42)** | (2.85)*** | (4.50)*** |
| *POPULATION(−1)* | −0.025 | −0.012 | −0.092 |
| | (1.03) | (0.37) | (2.21)** |
| *POLCON(−1)* | −0.000 | 0.000 | −0.034 |
| | (0.26) | (0.00) | (0.99) |
| *CONSTANT* | 0.090 | −0.388 | 0.422 |
| | (0.24) | (0.77) | (0.59) |
| $R^2$ | 0.16 | 0.13 | 0.15 |
| *N* | 512 | 509 | 512 |

t-Statistics in parentheses: * $p < 0.1$;** $p < 0.05$; *** $p < 0.01$.
All dependent variables are measured as 4-year average growth rates, hence the average growth rate from t − 4 to t. All independent variables with (−1) are measured as level values at t − 5. All models are estimated using fixed effects and standard errors that are robust to heteroscedasticity and serial correlation.

**Table 4.** Financial liberalization, financial development and the role of social capital: results for all years and for countries with high quality of formal institutions.

| | *LLY growth* | *DEPGDP growth* | *PRCGDP growth* |
|---|---|---|---|
| *LLY(−1)* | −0.125 | | |
| | (5.94)*** | | |
| *DEPGDP(−1)* | | −0.163 | |
| | | (2.64)** | |
| *PRCGDP(−1)* | | | −0.149 |
| | | | (5.77)*** |
| *FINLIB(−1)* | 0.004 | 0.001 | 0.006 |
| | (1.31) | (0.30) | (1.17) |
| *SC*FINLIB(−1)* | −0.004 | −0.008 | −0.001 |
| | (0.71) | (0.50) | (0.07) |
| *TRADE(−1)* | 0.013 | 0.034 | 0.051 |
| | (0.85) | (1.43) | (1.63) |
| *DEMOC(−1)* | −0.003 | −0.003 | −0.001 |
| | (2.12)** | (1.54) | (0.69) |
| *INFLATION(−1)* | −0.005 | 0.007 | −0.005 |
| | (1.16) | (0.75) | (0.71) |
| *GDP(−1)* | 0.017 | 0.040 | 0.026 |
| | (1.82)* | (2.09)** | (1.96)* |
| *POPULATION(−1)* | −0.167 | −0.066 | −0.033 |
| | (1.54) | (0.98) | (0.48) |
| *POLCON(−1)* | 0.008 | 0.010 | −0.124 |
| | (0.29) | (0.19) | (2.54)** |
| *CONSTANT* | 0.802 | 0.208 | −0.012 |
| | (1.32) | (0.22) | (0.01) |
| $R^2$ | 0.19 | 0.11 | 0.23 |
| *N* | 225 | 224 | 228 |

t-Statistics in parentheses: * $p < 0.1$;** $p < 0.05$; *** $p < 0.01$.
All dependent variables are measured as 4-year average growth rates, hence the average growth rate from t − 4 to t. All independent variables with (−1) are measured as level values at t − 5. All models are estimated using fixed effects and standard errors that are robust to heteroscedasticity and serial correlation.

**Table 5.** Financial liberalization, financial development and the role of social capital: results for all years and for countries with low quality of formal institutions.

| | *LLY growth* | *DEPGDP growth* | *PRCGDP growth* |
|---|---|---|---|
| *LLY(−1)* | −0.366 | | |
| | (6.86)*** | | |
| *DEPGDP(−1)* | | −0.513 | |
| | | (6.31)*** | |
| *PRCGDP(−1)* | | | −0.540 |
| | | | (5.83)*** |
| *FINLIB(−1)* | −0.003 | −0.002 | 0.001 |
| | (0.77) | (0.57) | (0.17) |
| *SC*FINLIB(−1)* | 0.019 | 0.017 | 0.020 |
| | (1.74)* | (1.48) | (1.16) |
| *TRADE(−1)* | 0.085 | 0.088 | 0.079 |
| | (2.73)*** | (2.40)** | (1.68)* |
| *DEMOC(−1)* | 0.000 | 0.001 | 0.000 |
| | (0.14) | (0.28) | (0.16) |
| *INFLATION(−1)* | −0.005 | −0.001 | 0.005 |
| | (1.35) | (0.31) | (0.75) |
| *GDP(−1)* | 0.025 | 0.029 | 0.066 |
| | (1.82)* | (1.87)* | (3.28)*** |
| *POPULATION(−1)* | −0.028 | −0.011 | −0.156 |
| | (0.80) | (0.23) | (2.46)** |
| *POLCON(−1)* | 0.017 | 0.023 | 0.004 |
| | (0.66) | (0.72) | (0.08) |
| *CONSTANT* | −0.005 | −0.398 | 1.161 |
| | (0.01) | (0.59) | (1.06) |
| $R^2$ | 0.22 | 0.23 | 0.24 |
| *N* | 287 | 285 | 284 |

t-Statistics in parentheses: * $p < 0.1$;** $p < 0.05$; *** $p < 0.01$.
All dependent variables are measured as 4-year average growth rates, hence the average growth rate from t − 4 to t. All independent variables with (−1) are measured as level values at t − 5. All models are estimated using fixed effects and standard errors that are robust to heteroscedasticity and serial correlation.

Moreover, the coefficients of the variables *TRADE* and *GDP* are significant and have the expected sign.

Next, we focus on sub-samples of countries with high and low quality of formal institutions. Countries with high (low) quality of formal institutions have above (below) median values of the variable *INSTITUTIONS*. If we estimate Equation (1) using data of countries with *high* quality of formal institutions, we find no significant results for the coefficient of financial liberalization (results displayed in Table 4). We also find no effect for the interaction term between financial liberalization and social capital. So, in countries with high levels of formal institutions, financial liberalization does not have an impact on financial deepening. This also holds for countries with high levels of social capital.

Redoing the analysis using data of countries with *low* quality of formal institutions shows that we find weak evidence that financial liberalization positively affects financial development and that this relationship is stronger in countries with high levels of social capital (results shown in Table 5). This conclusion is based on the fact that we find significant results for

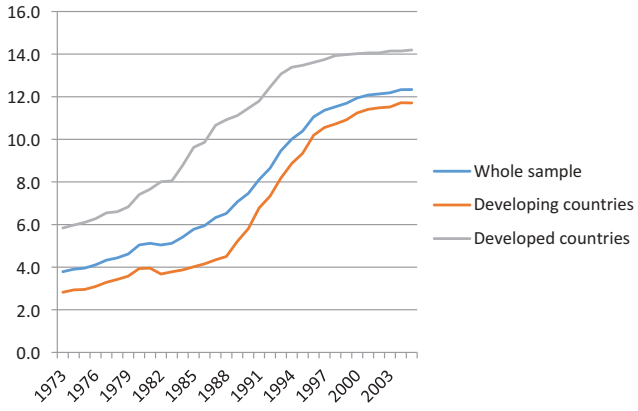


**Figure 1.** Financial liberalization over time for the whole sample, developing countries and developed countries, 1973–2005.

The sum of financial liberalization is measured by adding up the value of the financial liberalization index (which can take values between 0 and 15) for the whole sample of countries, all developing and all developed countries for the period 1973–2005. Data for the financial liberalization index are taken from Abiad, Detragiache, and Tressel (2010). The list of developing and developed countries included in our analysis is presented in Appendix Table A.1.

our measure of financial liberalization and its interaction with our measure of social capital for one of three measures of financial development (*LLY*). The signs of the coefficients for these two variables are as expected but not significant for the other two measures of financial development (*DEPGDP* and *PRCGDP*). Thus, we find weak evidence that for countries with low quality of formal institutions social capital may act as a substitute in moderating the positive impact of financial liberalization on financial development.

Thus far, the empirical analysis does not strongly support our hypothesis. One reason we find only weak support may be due to the fact that financial liberalization policies only really took off from the late 1980s, i.e. when the Washington consensus became the dominant macroeconomic policy framework in many (especially developing) economies. As is shown in Figure 1, from 1989 there is a significant jump in the values of our financial liberalization variable, in particular for developing economies. Before 1989, *FINLIB* remains relatively stable for developed as well as developing economies. At the same time, Figure 2 shows that our measures of financial development fluctuate over time, especially for the sample of developing countries. Yet, the overall trend in these variables for all countries (developing as well as developed) is that they are moving upward.

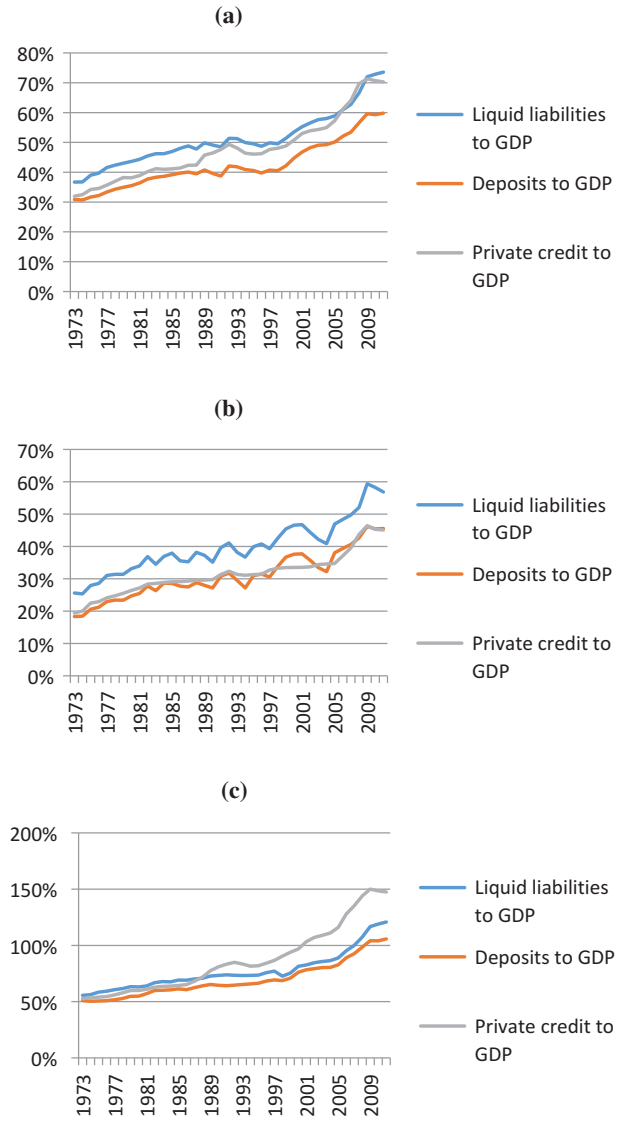


**Figure 2.** Financial development over time for the whole sample (a), developing countries (b) and developed countries (c), 1973–2011.

The three figures show data for the three financial development measures used in the analyses for the whole sample, all developing countries and all developed countries. The data presented are standard indicators of financial sector development (in percentages of total GDP of a country). The data are taken from the Global Financial Development Database (GFDD). The list of developing and developed countries included in our analysis is presented in Appendix Table A.1.

Based on these findings, we argue that a positive relationship between financial liberalization and financial development, and the impact of social capital on this relationship, may only occur after 1989. The trends of the variables shown in Figures 1 and 2 suggest that social capital may act as a substitute for weak formal institutions, especially when the implementation of financial liberalization policies is relatively strong.

Tables 6–8 show the results of estimating Equation (1) using data for all countries in our sample for the post-Washington consensus period (i.e. from 1989 to 2008) only. Table 6 shows that the coefficient for *FINLIB* is always negative, but only when we use *LLY* it is statistically significant. This suggests that financial liberalization does not have an impact (or may even have a negative impact) on financial development in the post-Washington consensus period. This outcome corroborates at least part of the existing literature, which argues that financial liberalization as such may reduce effective financial intermediation (Stiglitz 2000; Boot 2000) and that financial liberalization only has a positive impact on financial development in the presence of well-developed formal institutions.

At the same time, the coefficient for the interaction between financial liberalization and social capital is always positive and significant. Figures 3–5, which present the joint effect of financial liberalization and the interaction of this variable with the social capital variable, show that the overall effect of both variables on financial development is positive for reasonable levels of financial liberalization.

**Table 6.** Financial liberalization, financial development and the role of social capital: results for all countries, 1989–2008.

| | *LLY growth* | *DEPGDP growth* | *PRCGDP growth* |
|---|---|---|---|
| *LLY(−1)* | −0.322 | | |
| | (6.43)*** | | |
| *DEPGDP(−1)* | | −0.295 | |
| | | (4.55)*** | |
| *PRCGDP(−1)* | | | −0.290 |
| | | | (5.56)*** |
| *FINLIB(−1)* | −0.019 | −0.015 | −0.015 |
| | (2.14)** | (1.61) | (1.37) |
| *SC*FINLIB(−1)* | 0.081 | 0.063 | 0.088 |
| | (2.82)*** | (1.94)* | (2.00)** |
| *TRADE(−1)* | 0.024 | 0.016 | −0.020 |
| | (0.90) | (0.50) | (0.38) |
| *DEMOC(−1)* | −0.000 | −0.000 | 0.006 |
| | (0.14) | (0.03) | (1.79)* |
| *INFLATION(−1)* | −0.003 | 0.002 | 0.009 |
| | (0.63) | (0.46) | (1.15) |
| *GDP(−1)* | 0.041 | 0.041 | 0.086 |
| | (2.69)** | (2.47)** | (3.08)*** |
| *POPULATION(−1)* | 0.020 | 0.015 | −0.093 |
| | (0.35) | (0.22) | (0.84) |
| *POLCON(−1)* | −0.006 | −0.001 | −0.043 |
| | (0.20) | (0.05) | (0.70) |
| *CONSTANT* | −1.186 | −1.144 | −0.540 |
| | (1.28) | (1.04) | (0.30) |
| $R^2$ | 0.23 | 0.17 | 0.23 |
| *N* | 303 | 302 | 305 |

t-Statistics in parentheses: * $p < 0.1$;** $p < 0.05$; *** $p < 0.01$.
All dependent variables are measured as 4-year average growth rates, hence the average growth rate from t − 4 to t. All independent variables with (−1) are measured as level values at t − 5. All models are estimated using fixed effects and standard errors that are robust to heteroscedasticity and serial correlation.

**Table 7.** Financial liberalization, financial development and the role of social capital: results for countries with high quality of formal institutions, 1989–2008.

| | *LLY growth* | *DEPGDP growth* | *PRCGDP growth* |
|---|---|---|---|
| *LLY(−1)* | −0.204 | | |
| | (6.64)*** | | |
| *DEPGDP(−1)* | | −0.187 | |
| | | (2.76)*** | |
| *PRCGDP(−1)* | | | −0.192 |
| | | | (5.41)*** |
| *FINLIB(−1)* | 0.004 | 0.006 | 0.001 |
| | (0.72) | (0.76) | (0.04) |
| *SC*FINLIB(−1)* | 0.007 | 0.000 | 0.058 |
| | (0.36) | (0.01) | (0.65) |
| *TRADE(−1)* | −0.019 | −0.009 | 0.015 |
| | (0.98) | (0.28) | (0.38) |
| *DEMOC(−1)* | −0.016 | −0.012 | −0.006 |
| | (1.70)* | (1.79)* | (0.41) |
| *INFLATION(−1)* | −0.006 | 0.006 | 0.006 |
| | (1.31) | (0.56) | (0.72) |
| *GDP(−1)* | 0.057 | 0.072 | 0.121 |
| | (3.16)*** | (3.68)*** | (5.09)*** |
| *POPULATION(−1)* | 0.040 | 0.084 | −0.205 |
| | (0.52) | (1.10) | (1.94)* |
| *POLCON(−1)* | −0.028 | 0.045 | 0.009 |
| | (0.44) | (0.44) | (0.10) |
| *CONSTANT* | −1.722 | −2.966 | 0.243 |
| | (1.56) | (2.68)** | (0.13) |
| $R^2$ | 0.36 | 0.17 | 0.42 |
| *N* | 127 | 126 | 130 |

t-Statistics in parentheses: * $p < 0.1$;** $p < 0.05$; *** $p < 0.01$.
All dependent variables are measured as 4-year average growth rates, hence the average growth rate from t − 4 to t. All independent variables with (−1) are measured as level values at t − 5. All models are estimated using fixed effects and standard errors that are robust to heteroscedasticity and serial correlation.

**Table 8.** Financial liberalization, financial development and the role of social capital: results for countries with low quality of formal institutions, 1989–2008.

| | *LLY growth* | *DEPGDP growth* | *PRCGDP growth* |
|---|---|---|---|
| *LLY(−1)* | −0.534 | | |
| | (5.80)*** | | |
| *DEPGDP(−1)* | | −0.658 | |
| | | (5.98)*** | |
| *PRCGDP(−1)* | | | −0.800 |
| | | | (7.15)*** |
| *FINLIB(−1)* | −0.025 | −0.017 | −0.019 |
| | (2.40)*** | (1.68)* | (1.83)* |
| *SC*FINLIB(−1)* | 0.114 | 0.073 | 0.102 |
| | (3.27)*** | (2.20)** | (2.65)** |
| *TRADE(−1)* | 0.092 | 0.057 | −0.076 |
| | (1.74)* | (0.98) | (0.90) |
| *DEMOC(−1)* | −0.000 | 0.000 | 0.002 |
| | (0.10) | (0.08) | (0.46) |
| *INFLATION(−1)* | −0.002 | 0.000 | 0.012 |
| | (0.41) | (0.05) | (1.31) |
| *GDP(−1)* | 0.030 | 0.023 | 0.095 |
| | (1.31) | (0.89) | (2.22)** |
| *POPULATION(−1)* | 0.043 | 0.067 | −0.022 |
| | (0.54) | (0.76) | (0.17) |
| *POLCON(−1)* | 0.005 | 0.001 | 0.017 |
| | (0.15) | (0.03) | (0.25) |
| *CONSTANT* | −1.255 | −1.494 | −1.635 |
| | (0.92) | (0.95) | (0.75) |
| $R^2$ | 0.37 | 0.33 | 0.40 |
| *N* | 176 | 176 | 175 |

t-Statistics in parentheses: * $p < 0.1$;** $p < 0.05$; *** $p < 0.01$.
All dependent variables are measured as 4-year average growth rates, hence the average growth rate from t − 4 to t. All independent variables with (−1) are measured as level values at t − 5. All models are estimated using fixed effects and standard errors that are robust to heteroscedasticity and serial correlation.

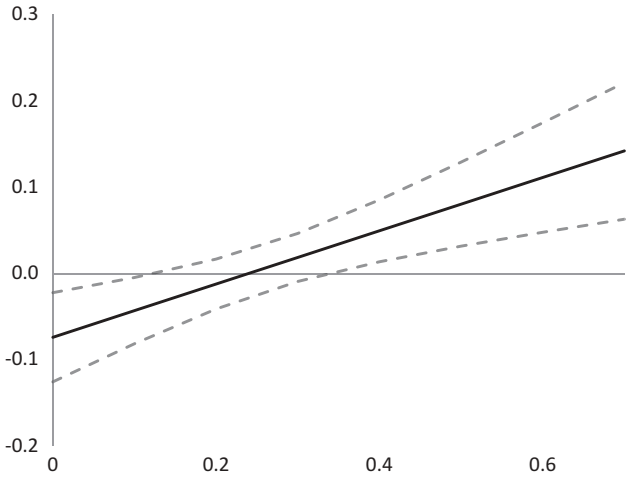


**Figure 3.** Marginal effects of financial liberalization on liquid liabilities to GDP.

This graph displays the marginal effect of financial liberalization (solid line) on financial development for different values of social capital (horizontal axis). The dotted lines represent the 95 per cent confidence interval.

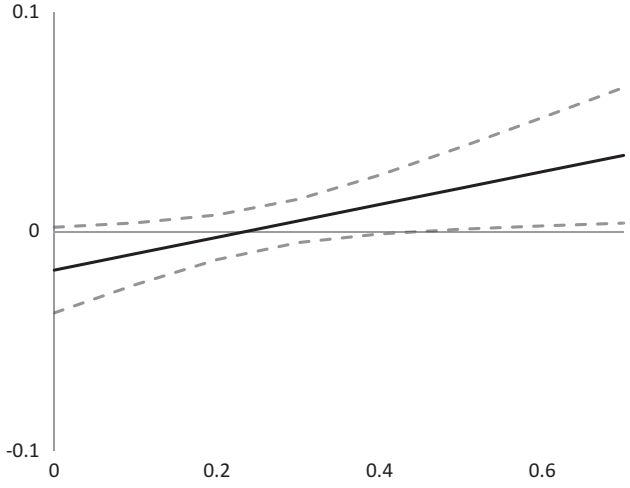


**Figure 4.** Marginal effects of financial liberalization on deposits to GDP.

This graph displays the marginal effect of financial liberalization (solid line) on financial development for different values of social capital (horizontal axis). The dotted lines represent the 95 per cent confidence interval.

In particular, these figures show that the marginal effect of financial liberalization on financial development turns from being negative and significant to positive and significant as the level of social capital increases. As argued above, this may be because social capital and formal institutions are substitutes. These results suggest that, at least for the period 1989–2008, financial liberalization has a positive impact on financial development in countries with higher levels of social capital.

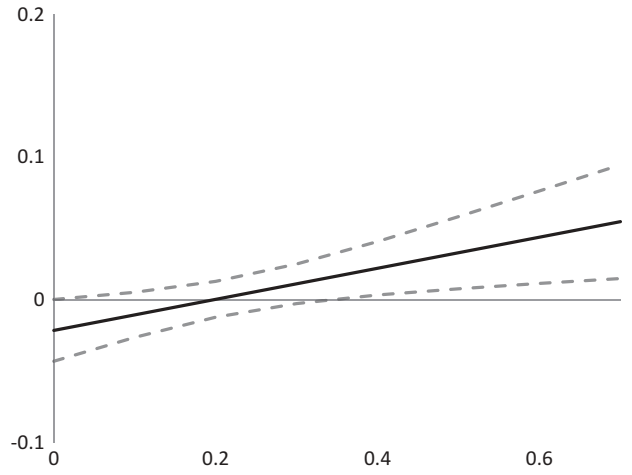


**Figure 5.** Marginal effects of financial liberalization on private credit to GDP.

This graph displays the marginal effect of financial liberalization (solid line) on financial development for different values of social capital (horizontal axis). The dotted lines represent the 95 per cent confidence interval.

Redoing the analysis for countries with high quality of formal institutions yields no significant results (results displayed in Table 7). This suggests that for countries with high quality of formal institutions, social capital is not a substitute, not even during a period in which financial liberalization policies are relatively strong. When we redo the analysis with data from countries with low quality of formal institutions, we find strong support for our hypothesis (Table 8). First of all, for all three variables of financial development, the coefficient for the financial liberalization variable is negative and significant. Thus, in these countries financial liberalization during the post-Washington consensus period actually *negatively* contributes to financial development. Second, the coefficient for the interaction term between financial liberalization and social capital is always positive and significant. This outcome suggests that in countries with low quality of formal institutions and high levels of social capital, financial liberalization has a positive impact on financial development, since social capital may substitute for low quality of formal institutions. Figures 6–8, in which we present the joint effect of financial liberalization and the interaction of this variable with the social capital variable, shows that the overall effect of both variables on financial development is positive for reasonable levels of financial liberalization. More specifically, these figures show for the post-Washington consensus period how the interaction

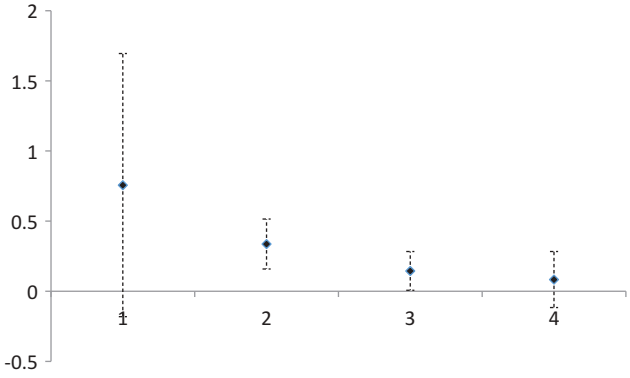


**Figure 6.** Magnitude and significance of interaction term across different samples.

This graph displays the coefficient of interaction term (model 1) and the 95 per cent confidence interval (dotted lines) when I move from a sample including only countries with very poor institutional quality (1), to a sample of countries with very high institutional quality (4). These samples are formed by taking quartiles (first, second, third and fourth) of the principal component that defines institutional quality. *LLY* is the dependent variable.

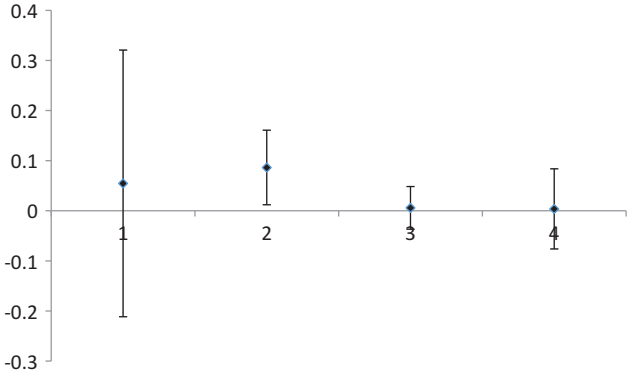


**Figure 7.** Magnitude and significance of interaction term across different samples.

This graph displays the coefficient of interaction term (model 1) and the 95 per cent confidence interval (dotted lines) when I move from a sample including only countries with very poor institutional quality (1), to a sample of countries with very high institutional quality (4). These samples are formed by taking quartiles (first, second, third and fourth) of the principal component that defines institutional quality. *DEPGDP* is the dependent variable.

effect changes when we move from a sample consisting of countries with very poor institutional quality to countries with very high institutional quality. These figures clearly show that the interaction effect becomes weaker when the quality of formal institutions increases, and that the interaction term is significant and positive for samples with low institutional quality. This can be considered as evidence that social capital can take over the role of formal institutions when the latter are of poor quality.

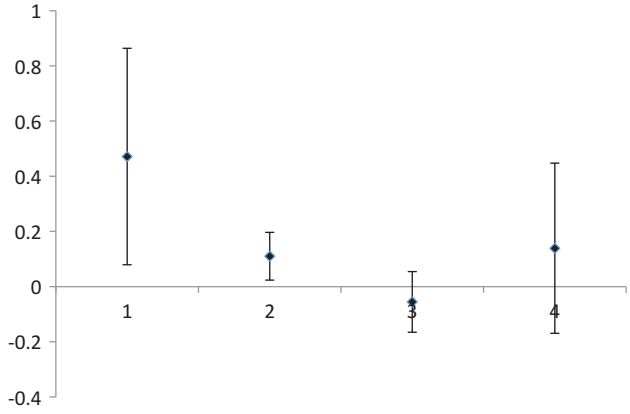


**Figure 8.** Magnitude and significance of interaction term across different samples.

This graph displays the coefficient of interaction term (model 1) and the 95 per cent confidence interval (dotted lines) when I move from a sample including only countries with very poor institutional quality (1), to a sample of countries with very high institutional quality (4). These samples are formed by taking quartiles (first, second, third and fourth) of the principal component that defines institutional quality. *PRCGDP* is the dependent variable.

Overall, the results from our empirical analysis seem to support our hypothesis. We find that the association between financial liberalization and financial development is indeed conditional on the prevailing level of social capital. Yet, this only holds for countries with weak formal institutions and during a period in which financial liberalization efforts are strong (i.e. during the post-Washington consensus period of 1989–2008).

Table 9 provides the list of countries that have relatively high (i.e. above the sample median) values of social capital, while at the same time having formal institutions of poor quality (i.e. below the sample median value). The list contains countries from various regions and continents. However, most countries are from Asia (6 of 17), Africa (5) and Eastern Europe (4); no countries from South America are included. Moreover, it includes only emerging economies, suggesting that our results hold most strongly for this group of countries.

**Table 9.** Countries with high social capital (above the median) and low quality of formal institutions (below the mean).

| Albania | Indonesia | Senegal |
|---|---|---|
| Belarus | Jordan | Thailand |
| China | Madagascar | Tunisia |
| Dominican Republic | Mozambique | Ukraine |
| Egypt | Pakistan | Vietnam |
| India | Russia | |

### Robustness checks

We carry out a number of robustness checks to verify the robustness of the results we have discussed so far. First, the empirical model expressed in Equation (1) has a number of drawbacks.

Since it is a fixed-effects model, time-invariant variables cannot be included. As explained, this also means that our social capital variable does not directly enter the empirical analysis. One way to get around this problem is to include group means of the time-variant independent variables and subtract the group means from these time-variant variables, a procedure known in the literature as cluster-mean centring (Antonakis et al. 2010; Dieleman and Templin 2014). By doing so, the model becomes a within-between estimation, which is a slight adjustment of the Mundlak (1978) specification.[7] The model now reads as:

$$Growth\ of\ FD^{i}_{t,t-4} = \beta_1 + \rho_1\left(X^{i}_{t-5} - \overline{X^{i}}\right) + \rho_2\overline{X^{i}} + \rho_3 SC^{i} + \mu^{i} + \varepsilon^{i}_{t}, \quad (2)$$

where $X$ contains all time-variant variables (i.e. *FD*, $SC * FINLIB$, *FINLIB*, and the vector of control variables) and $\bar{X}$ contains the group level means (measured from $t-5$ onwards) of the time-variant variables.[8] Again, we use the 4-year period growth rate of financial development as the dependent variable, with the level values just prior to the 4-year period (i.e. at $t-5$) as the independent variables. Mundlak (1978) shows that in such a specification, $\rho_1$ captures the within-group variation over time and that this coefficient is exactly equal to the coefficient of a fixed-effects estimation, even when the unobserved effects are assumed to be random.[9] The between effects of the time-variant averages are captured by coefficient $\rho_2$. As this model is measured assuming random effects, social capital is not omitted and hence $\rho_3$ can be used to measure the (between) effect of the prevailing level of social capital on financial development. As both terms of the interaction term are now included separately, the interaction term can be properly interpreted (Bell and Jones 2015).[10] Table 10 presents the results of the estimations of Equation (2). We show the results for the sub-sample of countries with weak quality of formal institutions and use data for the post-Washington consensus period only.[11] As is clear from this table, the results are similar to those presented in Table 8. The coefficients for the interaction term and the financial liberalization term are always

**Table 10.** Financial liberalization, financial development and the role of social capital: results for countries with low quality of formal institutions, 1989–2008 (Mundlak model estimations).

| | *LLY growth* | *DEPGDP growth* | *PRCGDP growth* |
|---|---|---|---|
| *LLY(−1)* | −1.689 | | |
| | (7.23)*** | | |
| *DEPGDP(−1)* | | −0.646 | |
| | | (6.75)*** | |
| *PRCGDP(−1)* | | | −0.800 |
| | | | (7.95)*** |
| *SC* | 1.352 | 0.044 | 0.487 |
| | (2.63)*** | (0.24) | (1.34) |
| *FINLIB(−1)* | −0.063 | −0.015 | −0.020 |
| | (3.49)*** | (2.61)*** | (2.21)** |
| *SC*FINLIB(−1)* | 0.289 | 0.069 | 0.103 |
| | (3.83)*** | (2.86)*** | (2.79)*** |
| *TRADE(−1)* | 0.325 | 0.063 | −0.080 |
| | (2.10)** | (1.21) | (1.13) |
| *DEMOC(−1)* | 0.005 | 0.001 | 0.002 |
| | (0.71) | (0.33) | (0.48) |
| *INFLATION(−1)* | −0.016 | 0.001 | 0.012 |
| | (0.90) | (0.13) | (1.28) |
| *GDP(−1)* | 0.149 | 0.027 | 0.093 |
| | (2.06)** | (1.13) | (2.50)** |
| *POPULATION(−1)* | 0.033 | 0.012 | −0.003 |
| | (1.20) | (1.19) | (0.15) |
| *POLCON(−1)* | 0.021 | −0.003 | 0.018 |
| | (0.18) | (0.07) | (0.32) |
| *CONSTANT* | −0.263 | −0.040 | −0.197 |
| | (0.68) | (0.29) | (0.71) |
| $R^2$ (within) | 0.32 | 0.33 | 0.39 |
| *N* | 176 | 176 | 175 |

t-Statistics in parentheses: ** $p < 0.05$; *** $p < 0.01$.

All dependent variables with are measured as 4-year average growth rates, hence the average growth rate from t − 4 to t. All independent variables with (−1) are measured as level values at t − 5. The added means of the time variant variables are estimated, but not displayed in this table for matters of convenience.

[7] The exact Mundlak specification would read as: $Growth\ of\ FD^{i}_{t,t-4} = \beta_1 + \rho_1\left(X^{i}_{t-5}\right) + \rho_2\overline{X^{i}} + \rho_3 SC^{i} + \mu^{i}_{t} + \varepsilon^{i}_{t}$ in this case, coefficient $\rho_2$ would reflect the difference between the between and the within effect, which is less easily interpretable as $\rho_2$ in the model above, which only measures the between effect. The coefficient $\rho_1$ is equal in Mundlak's model and this model, but the constants differ. Another advantage of this model over a standard Mundlak equation is that there is no correlation between $X^{i}_{t-5}$ and $\overline{X^{i}}$ in the model (as opposed to the Mundlak model). This leads to more precise estimates. Although the model thus is slightly different, for matters of convenience we refer to this model as 'the Mundlak model'.

[8] $\overline{X^{i}}$ is thus the average of the level of $X$ in country i, where $X$ is measured at t − 5, t − 9, t − 14, etc.

[9] Naturally, this only is the case as long as the fixed-effects regression contains the same variables as the Mundlak regression.

[10] Despite the attractive features of the within-between estimation, there is some debate on the interpretability of time-invariant variables in these specifications (social capital in our case). More specifically, while the estimated coefficients of time-invariant variables may be consistent, the standard errors can become too small (especially when the time invariant effect is correlated with the individual effect), leading to potential incorrect conclusions concerning the statistical significance of these variables (Krishnakumar 2006; Chatelain and Ralf 2010). Coefficient $\rho_3$ (i.e. the coefficient for social capital) should thus be interpreted with caution.

[11] The results for the other samples are not reported, but are very similar to the results presented in Tables 3–7. The results of these other samples are available on request from the authors.

significant and do not switch sign. Moreover, the coefficient of the social capital variable is only significant (and positive) for one of three specifications (i.e. when we use *LLY* as our measure of financial development), suggesting that the direct relationship between the level of social capital and financial development is weak.[12]

As a second robustness check, we use five- instead of four-year average growth rates of the levels of financial development. All independent variables are again measured as the level of these variables at the end of the previous period. Thus, the growth of financial development for the period 1974–1978 is explained by the levels of the independent variables in 1973, etc. The results of the analysis, using data for the post-Washington consensus period and for countries with weak formal institutions only, are reported in Table 11. These results are very similar to those reported earlier in Table 8. The results for other periods and countries (not shown) are also similar to those reported earlier in Tables 3–5 and 6–8.[13] The results from this robustness check confirm that the association between financial liberalization and financial development is conditional on the prevailing level of social capital; yet, this only holds for countries with weak formal institutions and during a period in which financial liberalization efforts are strong.

Third, we carry out the same analysis, but instead of using our composite measure of financial liberalization policies, we replace the composite measure and use the individual policy measures in the regression model. Thus, we run regressions using policy variables for credit controls and excessively high reserve requirements, bank entry barriers, state ownership in the banking sector, interest rate controls, and restrictions on international capital flows. The results are shown in Tables 12–16 and are generally

**Table 11.** Financial liberalization, financial development and the role of social capital: results for countries with low quality of formal institutions, 1989–2008 (estimations with 5-year averages).

| | *LLY growth* | *DEPGDP growth* | *PRCGDP growth* |
|---|---|---|---|
| *LLY(−1)* | −0.558 | | |
| | (6.71)*** | | |
| *DEPGDP(−1)* | | −0.723 | |
| | | (7.86)*** | |
| *PRCGDP(−1)* | | | −0.565 |
| | | | (4.75)*** |
| *FINLIB(−1)* | −0.021 | −0.014 | −0.009 |
| | (2.93)*** | (2.00)* | (0.89) |
| *SC*FINLIB(−1)* | 0.107 | 0.074 | 0.064 |
| | (4.07)*** | (3.30)*** | (1.76)* |
| *TRADE(−1)* | 0.132 | 0.126 | −0.147 |
| | (2.10)** | (1.94)* | (1.58) |
| *DEMOC(−1)* | −0.000 | −0.000 | 0.001 |
| | (0.13) | (0.14) | (0.36) |
| *INFLATION(−1)* | −0.000 | 0.002 | 0.014 |
| | (0.03) | (0.24) | (1.37) |
| *GDP(−1)* | 0.012 | 0.005 | 0.035 |
| | (0.39) | (0.15) | (0.72) |
| *POPULATION(−1)* | 0.015 | 0.029 | −0.026 |
| | (0.19) | (0.32) | (0.18) |
| *POLCON(−1)* | 0.018 | 0.013 | 0.050 |
| | (0.45) | (0.33) | (0.78) |
| *CONSTANT* | −0.390 | −0.444 | −0.137 |
| | (0.29) | (0.29) | (0.06) |
| $R^2$ | 0.51 | 0.50 | 0.47 |
| *N* | 129 | 129 | 129 |

t-Statistics in parentheses: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

All dependent variables are measured as 5-year average growth rates, hence the average growth rate from t − 5 to t. All independent variables with (−1) are measured as level values at t − 6. All models are estimated using fixed effects and standard errors that are robust to heteroscedasticity and serial correlation.

**Table 12.** Interest rate controls, financial development and the role of social capital: results for countries with low quality of formal institutions, 1989–2008.

| | *LLY growth* | *DEPGDP growth* | *PRCGDP growth* |
|---|---|---|---|
| *LLY(−1)* | −1.652 | | |
| | (5.38)*** | | |
| *DEPGDP(−1)* | | −0.642 | |
| | | (6.07)*** | |
| *PRCGDP(−1)* | | | −0.801 |
| | | | (6.89)*** |
| *INT(−1)* | −0.160 | −0.046 | −0.055 |
| | (1.71)* | (1.08) | (1.15) |
| *SC*INT(−1)* | 0.811 | 0.156 | 0.316 |
| | (2.38)** | (1.08) | (1.83)* |
| *TRADE(−1)* | 0.235 | 0.050 | −0.094 |
| | (1.16) | (0.89) | (1.04) |
| *DEMOC(−1)* | 0.003 | 0.000 | 0.002 |
| | (0.37) | (0.22) | (0.53) |
| *INFLATION(−1)* | −0.017 | −0.000 | 0.011 |
| | (0.96) | (0.00) | (1.08) |
| *GDP(−1)* | 0.099 | 0.028 | 0.092 |
| | (1.39) | (1.18) | (2.54)** |
| *POPULATION(−1)* | 0.146 | 0.031 | −0.044 |
| | (0.61) | (0.38) | (0.35) |
| *POLCON(−1)* | −0.009 | −0.011 | 0.009 |
| | (0.10) | (0.31) | (0.14) |
| *CONSTANT* | −4.389 | −0.986 | −1.140 |
| | (1.01) | (0.75) | (0.63) |
| $R^2$ | 0.30 | 0.31 | 0.40 |
| *N* | 176 | 176 | 175 |

t-Statistics in parentheses * $p < 0.1$; *** $p < 0.01$.

This table displays the regressions results for Equation (1), where the financial liberalization composite measure (*FINLIB*) has been replaced by a measure of the extent of interest rate controls (*INT*; data from Abiad, Detragiache, and Tressel 2010). All dependent variables are measured as 4-year average growth rates, hence the average growth rate from t − 4 to t. All independent variables with (−1) are measured as level values at t − 5. All models are estimated using fixed effects and standard errors that are robust to heteroscedasticity and serial correlation.

[12]As a further robustness check, we re-estimate the model presented in Table 10, using the Hausman and Taylor (1981) estimator, instead of the adjusted Mundlak specification. The results are qualitatively very similar to those of the adjusted Mundlak specification. The results of the Hausman-Taylor estimator are not presented in the article to save space, but are available on request from the authors.

[13]The results for the other periods and countries are available on request from the authors.

**Table 13.** Credit controls, financial development and the role of social capital: results for countries with low quality of formal institutions, 1989–2008.

| | *LLY growth* | *DEPGDP growth* | *PRCGDP growth* |
|---|---|---|---|
| *LLY(−1)* | −1.826 | | |
| | (7.27)*** | | |
| *DEPGDP(−1)* | | −0.698 | |
| | | (7.10)*** | |
| *PRCGDP(−1)* | | | −0.783 |
| | | | (6.70)*** |
| *CREDIT(−1)* | −0.167 | −0.044 | −0.046 |
| | (1.92)* | (1.10) | (1.72)* |
| *SC*CREDIT(−1)* | 0.941 | 0.223 | 0.205 |
| | (3.01)*** | (1.70)* | (1.96)* |
| *TRADE(−1)* | 0.272 | 0.054 | −0.077 |
| | (1.44) | (0.99) | (0.83) |
| *DEMOC(−1)* | 0.003 | 0.000 | 0.002 |
| | (0.41) | (0.16) | (0.56) |
| *INFLATION(−1)* | −0.001 | 0.004 | 0.015 |
| | (0.04) | (0.79) | (1.67) |
| *GDP(−1)* | 0.135 | 0.026 | 0.112 |
| | (1.94)* | (1.16) | (2.91)*** |
| *POPULATION(−1)* | 0.079 | 0.029 | −0.057 |
| | (0.36) | (0.36) | (0.46) |
| *POLCON(−1)* | 0.012 | −0.006 | 0.006 |
| | (0.13) | (0.17) | (0.10) |
| *CONSTANT* | −4.095 | −0.924 | −1.399 |
| | (1.01) | (0.66) | (0.77) |
| $R^2$ | 0.33 | 0.33 | 0.38 |
| *N* | 176 | 176 | 175 |

t-Statistics in parentheses * $p < 0.1$; *** $p < 0.01$.

This table displays the regressions results for Equation (1), where the financial liberalization composite measure (*FINLIB*) has been replaced by a measure of the extent of interest rate controls (*CREDIT*; data from Abiad, Detragiache, and Tressel 2010). All dependent variables are measured as 4-year average growth rates, hence the average growth rate from t − 4 to t. All independent variables with (−1) are measured as level values at t − 5. All models are estimated using fixed effects and standard errors that are robust to heteroscedasticity and serial correlation.

**Table 14.** Entry barriers, financial development and the role of social capital: results for countries with low quality of formal institutions, 1989–2008.

| | *LLY growth* | *DEPGDP growth* | *PRCGDP growth* |
|---|---|---|---|
| *LLY(−1)* | −1.532 | | |
| | (6.64)*** | | |
| *DEPGDP(−1)* | | −0.642 | |
| | | (6.57)*** | |
| *PRCGDP(−1)* | | | −0.751 |
| | | | (6.98)*** |
| *ENTRY(−1)* | −0.130 | −0.030 | −0.065 |
| | (2.50)** | (2.18)** | (2.86)*** |
| *SC*ENTRY(−1)* | 0.550 | 0.103 | 0.242 |
| | (2.20)** | (1.76)* | (2.05)** |
| *TRADE(−1)* | 0.343 | 0.084 | −0.034 |
| | (1.73)* | (1.41) | (0.41) |
| *DEMOC(−1)* | 0.001 | −0.000 | 0.002 |
| | (0.13) | (0.01) | (0.49) |
| *INFLATION(−1)* | −0.009 | 0.002 | 0.013 |
| | (0.56) | (0.49) | (1.35) |
| *GDP(−1)* | 0.140 | 0.033 | 0.115 |
| | (2.10)** | (1.44) | (3.21)*** |
| *POPULATION(−1)* | 0.093 | 0.017 | −0.051 |
| | (0.35) | (0.19) | (0.42) |
| *POLCON(−1)* | −0.000 | −0.005 | 0.016 |
| | (0.00) | (0.13) | (0.26) |
| *CONSTANT* | −4.508 | −0.881 | −1.575 |
| | (0.90) | (0.56) | (0.91) |
| $R^2$ | 0.27 | 0.30 | 0.39 |
| *N* | 176 | 176 | 175 |

t-statistics in parentheses * $p < 0.1$;** $p < 0.05$; *** $p < 0.01$.

This table displays the regressions results for Equation (1), where the financial liberalization composite measure (*FINLIB*) has been replaced by a measure of the extent of interest rate controls (*ENTRY*; data from Abiad, Detragiache, and Tressel 2010). All dependent variables are measured as 4-year average growth rates, hence the average growth rate from t − 4 to t. All independent variables with (−1) are measured as level values at t − 5. All models are estimated using fixed effects and standard errors that are robust to heteroscedasticity and serial correlation.

similar to the results discussed earlier. Thus, again it is confirmed that the association between financial liberalization and financial development is conditional on the prevailing level of social capital, but this is only true for countries with weak formal institutions and during a period in which financial liberalization efforts are strong. Yet, the results in Tables 12–16 also make clear that this result depends at least to some extent on the type of financial liberalization measures taken. In particular, the support for our hypothesis is most strongly confirmed when governments reduce or remove entry barriers for new banks. In all three regressions, the coefficient for the variable measuring the extent to which entry barriers are removed is negative and significant, while at the same time the coefficient of the interaction term between entry barriers variable and the social capital variable is positive and significant. The results are also supporting our hypothesis when the focus is on removing or reducing interest rate and credit controls, and/or controls on international capital flows, in particular when we use *LLY* and *PRCGDP* as our measures of financial development. We find no results, however, when governments reduce their direct involvement in the financial sector as owners of banks (Table 15). Apparently, this type of policies does not contribute to financial development. This is true in general, as well as for countries with high levels of social capital during and weak formal institutions.

Finally, we redo the regressions and experiment with the set of countries we include in the analysis to verify whether the results may be specific for specific regions of countries. In particular, we run regressions in which we leave out all Asian countries that were hit by the Asian crisis (i.e. China, Thailand, Vietnam, Indonesia the Philippines). Again, the results (not shown) from this robustness check confirm our earlier findings, i.e. the association between financial liberalization and financial development is conditional on the prevailing level of social capital, but this is only true for countries with weak formal institutions and

**Table 15.** State ownership, financial development and the role of social capital: results for countries with low quality of formal institutions, 1989–2008.

| | *LLY growth* | *DEPGDP growth* | *PRCGDP growth* |
|---|---|---|---|
| *LLY(−1)* | −1.459 | | |
| | (4.68)*** | | |
| *DEPGDP(−1)* | | −0.607 | |
| | | (5.75)*** | |
| *PRCGDP(−1)* | | | −0.748 |
| | | | (5.96)*** |
| *STATE(−1)* | −0.056 | −0.013 | 0.001 |
| | (1.00) | (0.56) | (0.02) |
| *SC*STATE(−1)* | 0.153 | 0.098 | 0.020 |
| | (0.66) | (0.91) | (0.11) |
| *TRADE(−1)* | 0.279 | 0.067 | −0.048 |
| | (1.32) | (1.03) | (0.56) |
| *DEMOC(−1)* | 0.002 | 0.000 | 0.002 |
| | (0.33) | (0.08) | (0.57) |
| *INFLATION(−1)* | −0.008 | 0.003 | 0.014 |
| | (0.54) | (0.68) | (1.48) |
| *GDP(−1)* | 0.155 | 0.021 | 0.108 |
| | (1.84)* | (0.84) | (2.49)** |
| *POPULATION(−1)* | 0.090 | 0.003 | −0.095 |
| | (0.32) | (0.04) | (0.70) |
| *POLCON(−1)* | −0.036 | −0.016 | −0.008 |
| | (0.35) | (0.41) | (0.13) |
| *CONSTANT* | −4.805 | −0.405 | −0.673 |
| | (0.87) | (0.27) | (0.30) |
| $R^2$ | 0.25 | 0.29 | 0.36 |
| *N* | 176 | 176 | 175 |

t-Statistics in parentheses * $p < 0.1$;** $p < 0.05$; *** $p < 0.01$.

This table displays the regressions results for Equation (1), where the financial liberalization composite measure (*FINLIB*) has been replaced by a measure of the extent of interest rate controls (*STATE*; data from Abiad, Detragiache, and Tressel 2010). All dependent variables are measured as 4-year average growth rates, hence the average growth rate from t − 4 to t. All independent variables with (−1) are measured as level values at t − 5. All models are estimated using fixed effects and standard errors that are robust to heteroscedasticity and serial correlation.

**Table 16.** Capital account controls, financial development and the role of social capital: Results for countries with low quality of formal institutions, 1989–2008.

| | *LLY growth* | *DEPGDP growth* | *PRCGDP growth* |
|---|---|---|---|
| *LLY(−1)* | −1.455 | | |
| | (5.08)*** | | |
| *DEPGDP(−1)* | | −0.612 | |
| | | (5.77)*** | |
| *PRCGDP(−1)* | | | −0.778 |
| | | | (7.35)*** |
| *CAP(−1)* | −0.129 | −0.034 | −0.021 |
| | (1.95)* | (1.57) | (1.06) |
| *SC*CAP(−1)* | 0.519 | 0.168 | 0.169 |
| | (2.34)** | (1.98)* | (2.72)*** |
| *TRADE(−1)* | 0.302 | 0.074 | −0.034 |
| | (1.46) | (1.15) | (0.42) |
| *DEMOC(−1)* | 0.002 | 0.000 | 0.002 |
| | (0.25) | (0.05) | (0.50) |
| *INFLATION(−1)* | −0.013 | 0.002 | 0.013 |
| | (0.94) | (0.36) | (1.48) |
| *GDP(−1)* | 0.123 | 0.020 | 0.098 |
| | (1.41) | (0.78) | (2.52)** |
| *POPULATION(−1)* | 0.117 | 0.020 | −0.079 |
| | (0.45) | (0.23) | (0.63) |
| *POLCON(−1)* | −0.000 | −0.009 | −0.005 |
| | (0.00) | (0.22) | (0.07) |
| *CONSTANT* | −4.527 | −0.643 | −0.721 |
| | (0.88) | (0.42) | (0.39) |
| $R^2$ | 0.28 | 0.31 | 0.38 |
| *N* | 176 | 176 | 175 |

t-Statistics in parentheses * $p < 0.1$;** $p < 0.05$; *** $p < 0.01$.

This table displays the regressions results for Equation (1), where the financial liberalization composite measure (*FINLIB*) has been replaced by a measure of the extent of interest rate controls (*CAP*; data from Abiad, Detragiache, and Tressel 2010). All dependent variables are measured as 4-year average growth rates, hence the average growth rate from t − 4 to t. All independent variables with (−1) are measured as level values at t − 5. All models are estimated using fixed effects and standard errors that are robust to heteroscedasticity and serial correlation.

during a period in which financial liberalization efforts are strong.[14] This outcome does not seem to be specific to countries from different regions.

## Summary of the results

Summarizing the results from this study, the relationship between financial liberalization and financial development appears to be conditional on the prevailing level social capital, which confirms our main hypothesis. Yet, this conditionality is mostly relevant for countries with weak formal institutions and during the so-called post-Washington consensus period when financial liberalization policies really took off. In case countries have developed formal institutions of higher quality, social capital is no longer of significant influence in determining the success of financial liberalization. These results suggest that social capital may act as a substitute for weakly developed formal institutions in determining the relationship between financial liberalization and financial development.

We explain these results by pointing out that financial liberalization policies in emerging economies accelerated from the late 1990s onwards. These countries acted upon the advice of the Washington consensus, which stipulated that countries could benefit from liberalizing their financial sectors (Gore 2000). However, as these countries did not have the proper institutional environment, for many of these countries financial liberalization often failed to promote financial development. This is in line with the evidence found in several empirical studies on the impact of financial liberalization policies on financial development and economic growth. These studies have identified institutional quality as an important prerequisite for successful financial liberalization policies. The results of our study suggest that social capital can be a substitute for formal institutional quality. Consequently,

[14]Again, these results are available on request from the authors.

countries with high levels of social capital managed to benefit from financial liberalization in the post-Washington consensus period, despite the low quality of their formal institutions.

## V. Conclusion

In this article, we have investigated why the effects of financial liberalization on financial development differ among countries. While the existing literature provides several answers to this question, we contribute by identifying an important prerequisite to successful financial liberalization, i.e. social capital. By performing an empirical analysis using panel data on 82 countries in the period 1973–2008, we find evidence that the success of financial liberalization in promoting financial development is conditional on the prevailing level of social capital. The conditional impact of social capital on the relationship between financial liberalization and financial development is especially strong during the so-called post-Washington consensus period and for countries with a weak institutional environment. Moreover, we show that this outcome is especially relevant for emerging economies and for different types of financial liberalization policies, except for policies aiming at reducing the state ownership of banks. These results remain robust after performing a range of different robustness analyses.

We interpret these results as follows. During the post-Washington consensus period (i.e. from 1989 onwards), many emerging economies liberalized their financial sectors as this was the generally accepted view on how to carry out growth-enhancing macroeconomic policies. At the same time, several of these countries did not develop the necessary formal institutions to make sure financial liberalization would lead to higher levels of financial development. As a result, financial liberalization generally failed to promote financial development in these countries. However, for some of these countries, a high prevailing level of social capital could effectively take over the role of formal institutions, thereby ensuring that financial liberalization *did* positively contribute to financial deepening.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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# Appendix

**Table A.1.** List of countries for which data are available in the sample.

| Albania | Costa Rica | Hong Kong | Mozambique | *Spain* |
|---|---|---|---|---|
| Argentina | Cote d'Ivoire | Hungary | *Netherlands* | Sri Lanka |
| *Australia* | Czech Rep | India | *New Zealand* | *Sweden* |
| *Austria* | *Denmark* | Indonesia | Nicaragua | *Switzerland* |
| Azerbaijan | Dominican Rep | *Israel* | Nigeria | Tanzania |
| Bangladesh | Ecuador | *Italy* | *Norway* | Thailand |
| Belarus | Egypt | *Japan* | Pakistan | Tunisia |
| *Belgium* | El Salvador | Jordan | Paraguay | Turkey |
| Bolivia | Estonia | Kenya | Peru | Uganda |
| Brazil | Ethiopia | Korea | Philippines | Ukraine |
| *Great Britain* | *Finland* | Kyrgyz Rep | Poland | *United States* |
| Bulgaria | *France* | Latvia | *Portugal* | Uruguay |
| Burkina-Faso | Georgia | Lithuania | Romania | Vietnam |
| Cameroon | *Germany* | Madagascar | Russia | Zimbabwe |
| *Canada* | Ghana | Malaysia | Senegal | |
| China | *Greece* | Mexico | Singapore | |
| Colombia | Guatemala | Morocco | South Africa | |

Countries *in italic* belong to the group of developed countries, all other countries are considered developing countries.

**Table A.2.** Correlation matrix formal institution variables and social capital.

| | *GOV* | *REG* | *VOICE* | *RULE* | *SC* | *BANK* |
|---|---|---|---|---|---|---|
| *GOV* | 1 | | | | | |
| *REG* | 0.93 | 1 | | | | |
| *VOICE* | 0.84 | 0.86 | 1 | | | |
| *RULE* | 0.96 | 0.91 | 0.87 | 1 | | |
| *SC* | 0.62 | 0.51 | 0.49 | 0.62 | 1 | |
| *BANK* | 0.58 | 0.56 | 0.55 | 0.58 | 0.36 | 1 |

*GOV, REG, VOICE* and *RULE* refer to government efficiency, regulatory quality, voice and accountability and rule of law, respectively. The data for these variables are obtained from the World Governance Indicators (WGI). *SC* refers to social capital using information from the World Value Surveys (WVS). *BANK* is a measure of the quality of banking supervision, a variable that is retrieved from the dataset created by Abiad, Detragiache, and Tressel (2010).

**Table A.3.** Principal component analysis for the institutional variables.

| Components | Eigenvalue | Proportion | Cumulative proportion |
|---|---|---|---|
| *1* | 4.83 | 0.805 | 0.805 |
| *2* | 0.84 | 0.139 | 0.944 |
| *3* | 0.20 | 0.034 | 0.978 |
| *4* | 0.72 | 0.012 | 0.990 |
| *5* | 0.04 | 0.007 | 0.996 |
| *6* | 0.02 | 0.003 | 1.000 |

**Table A.4.** Data description and sources.

| | Short definition | Source |
|---|---|---|
| *Dependent variables* | | |
| LLY | Liquid liabilities to GDP (%) | Global Financial Development Database (GFDD); available for |
| DEPGDP | Financial system deposits to GDP (%) | GFDD |
| PRCGDP | Private credit by deposit money banks and other financial institutions to GDP (%) | GFDD |
| *Independent variables* | | |
| SC | The average proportion of people within a country that have answered 'most people can be trusted' to the following question: Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people? | World Values Survey |
| FINLIB | Measures the existence of credit controls, interest rate controls, entry barrier in the financial sector, state ownership in the banking sector and restrictions on international capital flows; see below. | Abiad et al. (2010) |
| Credit controls and reserve requirements | Measures whether there are ceilings on credit towards certain sectors, whether there are high reserve requirements and whether there is directed credit towards favoured sectors or industries. | Abiad et al. (2010) |
| Interest rate controls | Measures whether the government imposes interest rate controls, either directly or by means of interest rate floors, ceilings or interest rate bands. | Abiad et al. (2010) |
| Entry barriers | Measures whether there are licensing requirements for newly established domestic financial institutions, restrictions on certain banking practices and entry barriers for foreign banks. | Abiad et al. (2010) |
| State ownership in the banking sector | Measures the share of banking assets controlled by state-owned banks. | Abiad et al. (2010) |
| Restrictions on international capital flows | Measures whether there are capital account controls and restrictions, transaction taxes and whether multiple exchange rates are used. | Abiad et al. (2010) |
| *Control variables* | | |
| GDP | Total gross domestic product. | GFDD |
| INFLATION | Yearly inflation rates. Inflation rates above 100% and below −100% are excluded. | GFDD |
| TRADE | The ratio of the sum of exports and imports to GDP | GFDD |
| POPULATION | The total size of the population. | GFDD |
| DEMOC | An index, ranging from 0 to 20, that measures the extent of democracy, where 0 refers to a full autocracy and 20 refers to a full democracy. | Polity IV Database |
| POLCON | Index that estimates the existence of political constraints. It considers various features of the legislative, executive and judicial branches of government and measures the overall ability of these underlying political structures to support credible policy commitments. | Henisz (2002) |
| *Additional variables (used in Principal component analysis)* | | |
| World Governance Indicators | These aggregate indicators combine the views of a large number of enterprise, citizen and expert survey respondents to measure a country's government effectiveness, voice and accountability, control over corruption and regulatory quality. | World Governance |
| Indicators | | |
| Banking regulation and supervision | Measures the independence of the banking supervisory agency, whether risk-based capital adequacy ratios based on the Basel standard are adopted and the coverage and conduct of supervisory oversight. | Abiad et al. (2010) |

**Table A.5.** Data availability and type.

| | Data availability | Data type |
|---|---|---|
| *Dependent variables* | | |
| LLY | 1973–2008 | Annual observations |
| DEPGDP | 1973–2008 | Annual observations |
| PRCGDP | 1973–2008 | Annual observations |
| *Independent variables* | | |
| SC | 1973–2008 | Time-invariant |
| FINLIB | | Annual observations |
| Credit controls and reserve requirements | 1973–2008 | Annual observations |
| Interest rate controls | 1973–2008 | Annual observations |
| Entry barriers | 1973–2008 | Annual observations |
| State ownership in the banking sector | 1973–2008 | Annual observations |
| Restrictions on international capital flows | 1973–2008 | Annual observations |
| *Control variables* | | |
| GDP | 1973–2008 | Annual observations |
| INFLATION | 1973–2008 | Annual observations |
| TRADE | 1973–2008 | Annual observations |
| POPULATION | 1973–2008 | Annual observations |
| DEMOC | 1973–2008 | Time-invariant |
| POLCON | 1973–2008 | Time-invariant |
| *Additional variables (used in Principal component analysis)* | | |
| World Governance Indicators for 1996–2001; annual for 2002–2008 | 1996–2008 | Bi-annual observations |
| Banking regulation and supervision | 1973–2008 | Annual observations |

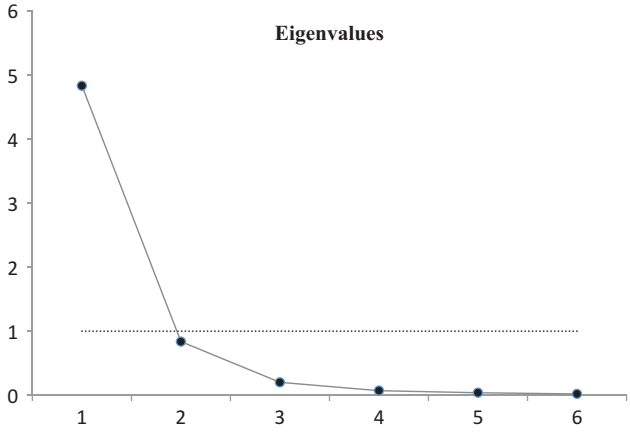


**Figure A.1.** Principal component analysis – graphical expression of eigenvalues of components.